AMENDMENTS TO THE CLAIMS

1. (original) A method for forming a deep trench capacitor buried plate comprising:

providing a substrate having a pad oxide layer and a pad nitride layer thereon, the pad oxide layer and the pad nitride layer having at least an opening;

performing a dry etching process for forming a deep trench in the substrate via the opening;

depositing a doped silicate glass film on an inner wall of the deep trench;

filling a sacrificial layer into the deep trench;

etching back the sacrificial layer for exposing parts of the doped silicate glass film;

removing the exposed doped silicate glass film;

removing the remaining sacrificial layer;

depositing a silicon nitride layer on the inner wall of the deep trench;

performing a thermal process for forming a doped region at a bottom of the trench;

removing the silicon nitride layer; and

removing the doped silicate glass film;

wherein the silicon nitride layer serves as a barrier layer for preventing ions of the doped silicate glass film from diffusing into a collar region of the deep trench.

2. (original) The method of claim 1 wherein the doped silicate glass film is an arsenic silicate glass (ASG) film.

3. (original) The method of claim 2 wherein the arsenic silicate glass film is formed by a chemical vapor deposition (CVD) process.

4. (original) The method of claim 1 wherein the silicon nitride layer is formed by a chemical vapor deposition process.

5. (original) The method of claim 1 wherein the doped silicate glass film is removed by an anisotropic etching process.

6. (original) The method of claim 1 wherein the silicon nitride layer is removed by an anisotropic etching process.

7. (currently amended) A method for forming a deep trench capacitor buried plate comprising:

providing a substrate having a pad oxide layer and a pad nitride layer thereon, the pad oxide layer and the pad nitride layer having at least an opening;

performing a dry etching process for forming a deep trench in the substrate via the opening;

depositing a doped silicate glass film on an inner wall of the deep trench;

filling a sacrificial layer into the deep trench;

removing a portion of the sacrificial layer for exposing parts of the doped silicate glass film;

performing an etching process to remove the exposed doped silicate glass film and a portion of the pad ~~nitride~~ oxide layer for forming a recess;

removing the remaining sacrificial layer;

depositing a silicon nitride layer on the inner wall of the deep trench;

performing a diffusing process for forming a doped region at a bottom of the trench;

removing the silicon nitride layer; and

removing the doped silicate glass film;

wherein the silicon nitride layer serves as a barrier layer for

preventing ions of the doped silicate glass film from diffusing into a collar region of the deep trench.

8. (original) The method of claim 7 wherein the doped silicate glass film is an arsenic silicate glass (ASG) film.

9. (original) The method of claim 8 wherein the arsenic silicate glass film is formed by a chemical vapor deposition (CVD) process.

10. (original) The method of claim 7 wherein the silicon nitride layer is formed by a chemical vapor deposition process.

11. (original) The method of claim 7 wherein the etching process is an anisotropic etching process.

12. (original) The method of claim 7 wherein the silicon nitride layer is removed by an anisotropic etching process.

13. (new) A method for forming a deep trench capacitor buried plate comprising:

providing a substrate having a pad oxide layer and a pad nitride layer thereon, the pad oxide layer and the pad nitride layer having at least an opening;

performing an etching process for forming a deep trench in the substrate via the opening;

depositing a doped silicate glass film on an inner wall of the deep trench;

filling a sacrificial layer into the deep trench;

etching back the sacrificial layer for exposing parts of the doped silicate glass film;

removing the exposed doped silicate glass film;

removing the remaining sacrificial layer;

depositing a silicon nitride layer on the inner wall of the deep trench after removing the remaining sacrificial layer;

performing a thermal process for forming a doped region at a bottom of the trench;

removing the silicon nitride layer; and

removing the doped silicate glass film.

14. (new) The method of claim 1 wherein the doped silicate glass film is an arsenic silicate glass (ASG) film.

15. (new) The method of claim 14 wherein the arsenic silicate glass film is formed by a chemical vapor deposition (CVD) process.

16. (new) The method of claim 13 wherein the silicon nitride layer is formed by a chemical vapor deposition process.

17. (new) The method of claim 13 wherein the doped silicate glass film is removed by an anisotropic etching process.

18. (new) The method of claim 1 wherein the silicon nitride layer is removed by an anisotropic etching process.

19. (new) The method of claim 1 wherein the silicon nitride layer serves as a barrier layer for preventing ions of the doped silicate glass film from diffusing into a collar region of the deep trench.